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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/525,092
Filing Date: February 23, 2005
Appellant(s): KIMURA ET AL.

Ronald Kubovcik
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 2/13/09 appealing from the Office action mailed 5/15/08.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The Examiner removes claims 13 and 15 from the preamble of the Nishimura, Tan, Kondo and Zeitler rejection, and also removes them from the Obuchi, Tan, Kondo and Zeitler rejection since they were mistaken included therein.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 6710135	Tan	3-2004
US 5593778	Kondo	1-1997
US 5811508	Zeitler	9-1998
US 6417294	Obuchi	7-2002
US 4009513	Andersen	3-1977
US 2003/0079297	Yamakita	5-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 1, 5-11, 16, 19, 20, 21, 23 and 26- 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura (JP 2001-131827, English translation provided) in view of Tan (WO 0212395, US 6710135 is used as an Equivalent English document) and in further view of Kondo (US 5593778) and Zeitler (US 5811508).

Nishimura discloses polylactic acid based flat yarns. Said yarns comprise polylactic acid with molecular weight 90,000-110,000 [0005], and a lubricant in the amount of 0.5-5 wt% [0007]. The lubricant may be ethylene bis-oleic amide and the like [0006], or an alkyl-substituted fatty acid monoamide. Nishimura does not disclose the use of melt spun yarns.

Tan discloses polylactic acid resin compositions. Said compositions are used for nonwoven fabrics and yarn (Column 3 Lines 25-26). Said polylactic acid has a molecular weight from 2000-500,000 (Column 6 Line 60) and may contain a lubricant

(Column 7 Line 44). Tan teaches the composition to be useful for tape yarn production as well as melt spun yarn (Column 10 Lines 26-39). Tan thusly teaches melt spinning and tape yarn formation to be functionally equivalent uses for polylactic acid compositions which have a MW of 2000-500,000.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Nishimura the use of melt spinning, as taught by Tan, as this technique is recognized in the art as a functional equivalent of tape yarn production.

Tan discloses that the tex or denier of the yarn is dependant on the end use but Tan does not disclose what range of tex is used (Column 12 Line 29). Kondo discloses biodegradable copolyester compositions of polylactic acid based fibers having a MW of at least 50,000 (Column 35 lines 50-62). Said compositions are melt spun into fibers. The fineness of the fiber dictates the feeling of wearing, where thinner fibers are softer and thicker fibers are stiffer (Column 38 lines 39-52). Typical fineness is from 5-50 d (denier), or 0.5-5.5 tex, or 5-55 dtex (tex=denier/9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Nishimura and Tan the use of 5-55 dtex fineness, as taught by Kondo, in order to increase the softness of the resulting article.

Nishimura and Tan include the elements set forth above. Tan does not disclose the carboxyl equivalence used for melt spinning fibers.

Zeitler discloses hydrolysis resistant polyester fibers. Polylactic acid fibers are a type of polyester. Zeitler discloses that the resistance of a polyester to hydrolysis depends greatly on the number of carboxyl end groups and that decreasing said end

groups improves said hydrolysis (Column 1 lines 27-35). Zeitler further discloses that polyesters should contain less than 10 meq of carboxyl end groups for optimum hydrolysis results (Column 3 line 14). Use of melt spinning, the same technique as Tan, is disclosed in Column 8 lines 25-28.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Nishimura and Tan the use of a carboxyl equivalent of less than 10 meq, as taught by Zeitler, in order to form a fiber with superior hydrolysis resistance. Nishimura, Tan, Zeitler and Kondo thusly meet all the composition limitations of claim 1.

As the composition requirements have been met, Examiner finds the properties of Claims 1, 6, 7, 8, 9 and 31 to be inherent. The MW disclosed above meets the requirements of claim 5. Tan discloses the melt-spun and tape yarn to be used for filaments, false twist texturing, as staple fibers, as knitted fabric, as woven and nonwoven fabric and as carpet, as required by Claims 10, 16, 20, 21, 26-30. As the composition requirements are met the Examiner finds the properties of Claims 11, 19, 20 and 23 to be inherent in Nishimura, Tan, Kondo and Zeitler.

2. Claims 1, 5-11, 16, 19, 20, 21, 23 and 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Obuchi (US 6417294) in view of Tan (WO 0212395, US 6710135 is used as and Equivalent English document) in further view Kondo (US 5593778) and Zeitler.

Obuchi discloses films and articles formed from polyester compositions containing a nucleating agent. The polyester is polylactic acid having a molecular

weight of 90,000-500,000 (Column 9 Line 39). The nucleating agent is 0.1-10 wt% of the composition (Column 6 Line 46) and comprises ethylenebislauramide, hexamethylenebisoleamide, and the like (Column 10 Lines 22-49), as required by Claims 1 and 5. Obuchi's composition is extrusion molded (Column 15 Lines 30-62). The molded article may be further used to form filaments and the like (Column 16 Line 50). Obuchi does not disclose the use of melt spun yarn.

Tan discloses polylactic acid resin compositions. Said compositions are used for nonwoven fabrics and yarn (Column 3 Lines 25-26). Said polylactic acid has a molecular weight from 2000-500,000 (Column 6 Line 60) and may contain a lubricant (Column 7 Line 44). Tan teaches the composition to be useful for extrusion molding production as well a melt spun yarns (Column 10 Lines 26-39). Tan thusly teaches melt spinning and extrusion molding to be functionally equivalent uses for the composition.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Obuchi the use of melt spinning, as taught by Tan, as this technique is recognized in the art as a functional equivalent of tape yarn production.

Tan discloses that the tex, or denier, or the yarn is dependant on the end use but Tan does not disclose what range of tex is used. Kondo discloses biodegradable copolyester compositions of polylactic acid based fibers having a MW of at least 50,000 (Column 35 lines 50-62). Said compositions are melt spun into fibers. The fineness of the fiber dictates the feeling of wearing, where thinner fibers are softer and thicker fibers are stiffer (Column 38 lines 39-52). Typical fineness is from 5-50 d (denier), or 0.5-5.5 tex, or 5-55 dtex (tex=denier/9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Obuchi and Tan the use of 5-55 dtex fineness, as taught by Kondo, in order to increase the softness of the resulting article.

Obuchi and Tan include the elements set forth above. Tan does not disclose the carboxyl equivalence used for melt spinning fibers.

Zeitler discloses hydrolysis resistant polyester fibers. Zeitler discloses that the resistance of a polyester to hydrolysis depends greatly on the number of carboxyl end groups and that decreasing said end groups improves said hydrolysis (Column 1 lines 27-35). Zeitler further discloses that polyesters should contain less than 10 meq of carboxyl end groups for optimum hydrolysis results (Column 3 line 14). Use of melt spinning, the same technique as Tan, is disclosed in Column 8 lines 25-28.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Obuchi and Tan the use of a carboxyl equivalent of less than 10 meq, as taught by Zeitler, in order to form a fiber with superior hydrolysis resistance. Obuchi, Tan, Zeitler and Kondo thusly meet all the limitations of newly amended claim 1.

As the composition requirements have been met, Examiner finds the properties of Claims 1, 6, 7, 8, 9 and 31 to be inherent. The MW of claim 5 is met as set forth above. Tan discloses the melt-spun and tape yarn to be used for filaments, false twist texturing, as staple fibers, as knitted fabric, as woven and nonwoven fabric and as carpet, as required by Claims 10, 16, 20, 21, 26-30. As the composition requirements

are met the Examiner finds the properties of Claims 11, 19, 20 and 23 to be inherent in Obuchi, Tan and Kondo.

3. Claims 13, 15, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura in view of Tan, Zeitler and Kondo, or, Obuchi in view of Tan, Zeitler and Kondo, and in further view of Anderson (US 4009513).

Nishimura, Tan, Zeitler and Kondo, and, Obuchi, Tan, Zeitler and Kondo include elements of the invention as discussed above. Nishimura, Tan, Zeitler and Kondo, and, Obuchi, Tan, Zeitler and Kondo do not include the use of fluid texturing to crimp the fiber, or the use of wound fibers.

Anderson discloses the production of yarn. Said yarn is disclosed to be wound on a beam prior to subsequent processing. Crimping, or texturing yarn, is disclosed in Column 1 Lines 34-41. The yarn of Anderson may be a polyester (Column 6 line 42). Polylactic acid, (as of Nishimura and Obuchi), are types of polyesters. Anderson discloses fluid texturing to be functionally equivalent to false twist texturing (Column 6 Lines 52-53). False twist texturing is disclosed by Tan, as set forth above.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Nishimura, Tan, Zeitler and Kondo or Obuchi, Tan, Zeitler and Kondo, the use of fluid texturing, as taught by Anderson, since this is recognized in the art as being functionally equivalent to false twist texturing.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Nishimura, Tan and Kondo or Obuchi, Tan and Kondo the use of

winding the fiber on a beam, as taught by Anderson, in order to aid in handling the fiber for future processing.

4. Claims 12, 14, 17, 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura in view of Tan, Zeitler and Kondo, or, Obuchi in view of Tan, Zeitler and Kondo, and in further view of Yamakita (US 2003/0079297).

Nishimura, Tan, Zeitler and Kondo, and, Obuchi, Tan, Zeitler and Kondo include elements of the invention as discussed above. Nishimura, Tan, Zeitler and Kondo, and, Obuchi, Tan, Zeitler and Kondo do not include the use of a smoothing agent to coat their fibers.

Yamakita discloses agents for coating biodegradable yarns (abstract). The biodegradable yarn may be polylactic acid [0003]. The yarns are coated with an aqueous solution in order to improve lubricity, cohesion and to prevent fuzzing and breaking (abstract). The solution comprises a polyether and/or polyether ester polymer [0007]-[0009] and [0021], or a smoothing agent. Said polyether component may comprise an alcohol, like methyl alcohol, butyl alcohol and the like [0024] and an alkylene oxide having 2-4 carbon atoms [0025], as required by the above Claims.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Nishimura, Tan, Zeitler and Kondo or Obuchi, Tan, Zeitler and Kondo, the use of a polyether smoothing agent, as taught by Yamakita, in order to improve lubricity, cohesion and to prevent fuzzing and breaking.

(10) Response to Argument

Regarding 1.a.i, pages 4-14 of the Appeal brief:

Applicant argues the office has not supported a case of obviousness because a person of ordinary skill would not have a reasonable expectation of success to form fibers having a 0.1-1 dtex fineness by melt spinning. Applicant argues that in carrying out melt spinning clogging of the nozzle is a problem, wherein one would have to use a filter to correct such, and the polymer must be maintained at a high temperature for long times, which is different from the process of extrusion or injection molding such as the films in Nishimura. Applicant argues that the bis-amide and/or alkyl-substituted fatty acid monoamide rarely reacts during melt-spinning and said amide or acid has remarkable heat resistance and yields higher quality fibers. Applicant argues Tan merely describes tape yarn forming and yarn forming as general examples. Applicant argues Kondo does not disclose lubricants and Zeitler makes no reference to polylactic acid polymers. Applicant argues Nishimura itself discloses that good results will not be obtained because fibrillation occurs in the fibers of Nishimura at dtex values less than 500. Applicant argues the office has not demonstrated that a person of ordinary skill would reasonably expect melt spinning and tape yarn production to be equivalents and the reliance on Tan, who does not disclose the same composition as Nishimura and Obuchi, is improper. Applicant argues the office has not provided reasons why results of Tan would apply to the compositions of Nishimura, especially in view of the difficulties outlined above. Applicant argues melt spun fibers and flat yarn have different properties

and a person would not expect that all compositions can be made into yarn can be melt spun. Applicant argues the amides of Nishimura have a different function that that of Applicant. Applicant argues the declaration provides evidence that melt spinning cannot be applied to Nishimura with good results. Applicant argues that functional equivalence, if it did exist, would not support a case of obviousness.

The Examiner disagrees. Nishimura and Tan disclose very similar compositions comprising polylactic acid and lubricants, wherein the polylactic acid in both references has overlapping molecular weight values. As such it is unclear why one would not have a reasonable expectation of using melt spinning when Tan discloses this to functionalize equivalently to the processes disclosed by Nishimura. Further, once you modify Nishimura with Tan a skilled artisan would realize any modification (such as the use of a filter) that may be needed when using melt spinning. That the processes are different and one must hold the polylactic acid at high temperatures is not persuasive since Tan teaches the functional equivalence of the two methods and as such one would not expect detrimental effects from using one or the other. That Applicant prefers the bis-amide and fatty acids becuase they yield higher heat resistance and higher quality of fibers is not persuasive since Nishimura anticipates the use of the claimed amides and as such the heat resistance and quality must be inherent properties. That Kondo does not disclose the use of lubricants is moot since Kondo is not relied upon for such. That Zeitler makes no reference to polylactic acid is moot since polylactic acid is a species of polyesters, and the concern over hydrolysis due to the carboxyl end groups is equally important and relevant to both, since they are polyesters and under go hydrolysis

through the same mechanism. That Tan only discloses tape yarn formation in the examples is moot since the reference is not limited to the teachings of the examples and since the disclosure teaches the functional equivalence of said methods. That Nishimura discloses that fibrillation occurs at less than 500 dtex is moot since Nishimura is using a different process than Tan. When one uses the process of Tan, and desires softer fibers, as taught by Kondo, one would be motivated to form a lower dtex fiber. Kondo is drawn to polylactic acid fibers having a MW within the ranges of Tan and Nishimura and as such it is the Examiner's position that one would have a reasonable expectation of success. That Tan does not disclose the same exact composition as Nishimura and Obuchi is found moot since all references are drawn to polylactic acid fiber compositions wherein the polylactic acid molecular weight ranges overlap. It is unclear why one would not have a reasonable expectation of success due to such and as such Applicant's arguments therein are not found persuasive. Since the compositions are so similar and they are used for the same purpose (i.e. forming fibers), one of ordinary skill would modify Nishimura with Tan because melt spinning and yarn formation are known function equivalents in the art. Applicant arguments that melt spun and yarn formed fibers have different properties and one would not expect all compositions that formed yarns could form melt spun fibers are not persuasive since, given that the compositions of Tan, Nishimura and Obuchi are so similar, one would have a reasonable expectation of success that one could form melt spun fibers of the composition of Nishimura. That the amides of Nishimura have a different function than Applicant's is not found persuasive since the composition requirements are met and the

beneficial properties therein must be inherent. The declaration previously set forth is not persuasive. Nishimura discloses the composition of the claims. Applicant may show unexpected properties due to melt spinning, however the declaration does show such. Further, the claims are to a fiber and thusly the properties of the cloth of the declaration are not commensurate in scope with the claimed invention. Since Nishimura discloses the composition requirements of the claims Applicant may show criticality or unexpected properties drawn from the process of making, however Applicant's four Examples in the declaration are not sufficient to show the properties to be unexpected since Applicant only exemplifies two different amides (both of which are anticipated by Nishimura and Obuchi). Since one would expect different compounds to yield different results the Examiner cannot properly ascertain whether this difference is unexpected with only two data points. Further, in light of Applicant's arguments, it seems the unexpectedness arises from the process, i.e. melt spinning, and as such comparative examples should be organized to show whether or not the claimed amides and melt spun fibers form an unexpected different product when compared with the processes used by Obuchi and Nishimura. Finally, Applicant's arguments that if functional equivalence did exist it would not support a case of obviousness are not found persuasive for the reasons set forth above by the Examiner.

Regarding 1.a.ii, pages 15-18 of the Appeal brief:

Applicant argues none of the references, alone or in combination, disclose that the unsubstituted fatty acid monoamide can improve wear resistance, the ability to

smoothly pass through processing steps, bring the b* value to that claimed or attain a high quality fiber with no yellow tint. Applicant argues these properties are unexpected and Applicant is not required to compare their invention to what is not in the prior art.

The Examiner disagrees. Since the composition requirements are met the properties are deemed inherent. Applicant's assertion that the properties are unexpected is not persuasive since for the reasons already set forth regarding the declaration above. Further, the results therein are not statistically significant and the Examiner requires more data points in order to ascertain the unexpectedness of the claimed invention. Additionally, the claims are drawn to any bis-amide and fatty acid, Applicant has only shown one example which produces different results. Applicant has not shown data which is commensurate in scope with the breadth of the claims. As such arguments therein are not found persuasive.

Regarding 2.a, pages 19-20 of the Appeal brief:

Applicant argues the arguments presented above in 1.a.ii equally relate to the rejection in view of Obuchi el al. Applicant argues the office has not supported a prima facie case of obviousness and one of ordinary skill would not have a reasonable expectation of success that fibers having a fineness of 0.1-10 dtex can be produced. Applicant argues the properties resulting from the claimed invention are not suggested or disclosed.

The Examiner disagrees. One would have a reasonable expectation of success for the same reasons already set forth above, i.e. the compositions are all drawn to

polylactic acid based fibers of similiar molecular weights. Since the composition requirements are met the properties must be inherent. The unexpected results are not persuasive for the reasons set forth above and as such Applicant's arguments herein are found moot.

Regarding 3.a:

Since this rejection is based on claim 1, which Applicant argues is allowable over the prior art, Applicant argues the claims herein are also allowable.

The Examiner disagrees since claim 1 is not allowable for the reasons set forth above.

Regarding 4.a.

Since this rejection is based on claim 1, which Applicant argues is allowable over the prior art, Applicant argues the claims herein are also allowable.

The Examiner disagrees since claim 1 is not allowable for the reasons set forth above.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Alicia Toscano

/Alicia M Toscano/

Examiner, Art Unit 1796

Conferees:

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